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STURTEVANT

Mill Company, Boston

Catalog

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Year of Issue 1914
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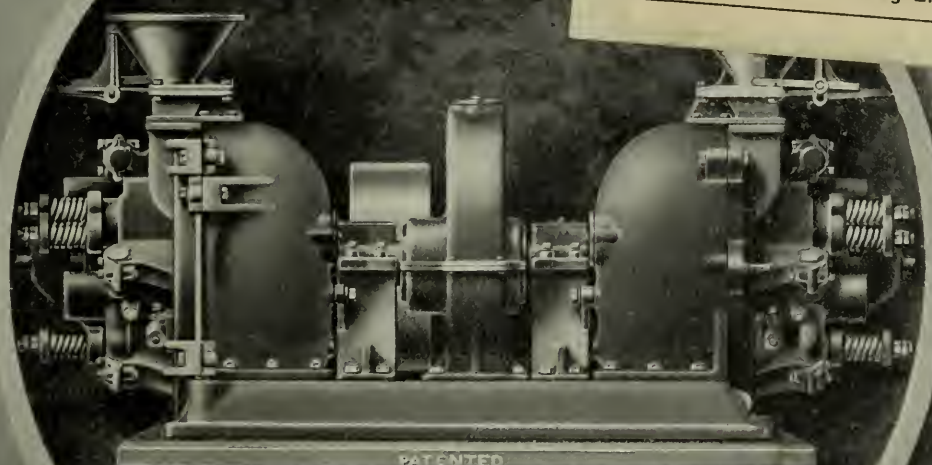

OPEN DO

RING ROLLS

PULVERIZER

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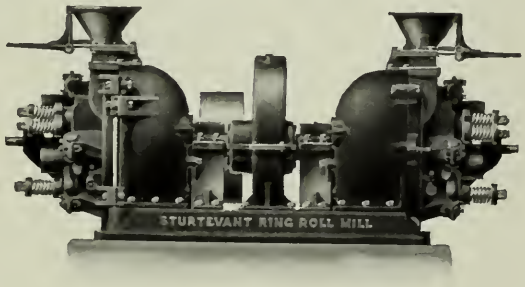
RING ROLL CATALOGUE NUMBER 79B

STURTEVANT

CRUSHING, GRINDING, SCREENING AND MIXING MACHINERY

ALL OF STURTEVANT QUALITY



Patented

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NEW YORK CHICAGO DENVER

REPRESENTATIVES
HARRON, RICKARD & MCCONE — SAN FRANCISCO & LOS ANGELES
MAYSMITH AND LOWE — VICTORIA, B. C., CAN.

FOREIGN
STURTEVANT ENGINEERING CO., LTD., LONDON
PARIS BRUSSELS BERLIN VIENNA TURIN

STURTEVANT MILL COMPANY
HARRISON SQUARE BOSTON MASSACHUSETTS

STURTEVANT OPEN DOOR RING-ROLL MILL

ESTABLISHED 1883

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STURTEVANT MILL COMPANY

FOR more than thirty years The Sturtevant Mill Company has encouraged its inventors to produce the best, regardless of cost. Our circulars exhibit such service qualities as cannot be found elsewhere.

¶The Sturtevant splendidly equipped plants produce interchangeable parts. Abundant capital assures prompt delivery of large orders.

EXPERIENCE

¶The experience gained in producing, for so many years, rock reducing machinery of the highest class has a real value. Designs tested by thousands of users, and faults discovered and corrected, form a strong basis for confidence. It is only gradually that the best machines are evolved. That they do not break is because we have been taught where to make them strong; that they give maximum outputs is because experience has shown how to make them effective. What each will do is generally known, and in most cases what each will not do.

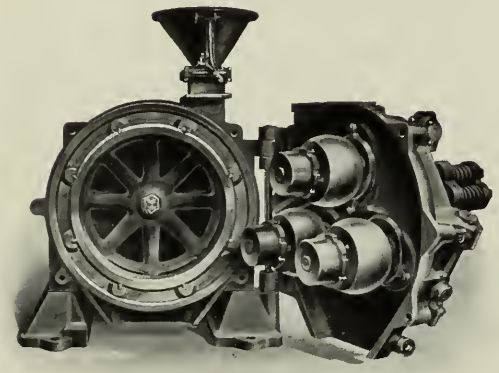
OPPORTUNITY FOR TESTS

¶Prospective buyers are invited to send (transportation prepaid) samples of material which it is desired to reduce, to our testing department at Harrison Square, Boston, Mass. Here without charge, and in machines of full size, personally conducted experiments may be made to determine the adaptability and efficiency of Sturtevant Machinery. This department is largely availed of, and decisions of importance are frequently made, and costly errors avoided. This company will not sell machinery that it does not believe to be efficient.

SALE OR RETURN

¶To correct errors of judgment and to thoroughly satisfy patrons we sell Sturtevant Machines to responsible parties, not acquainted with them, as per our Sale or Return Proposition, which will be sent upon request.

STURTEVANT MILL COMPANY
HARRISON SQUARE BOSTON MASSACHUSETTS



Patented

STURTEVANT RING ROLL MILLS

Vertical Ring and Roller Mills are standard grinding machines of great capacity and unusual merit. The output may be varied from 1/8 inch to such fine pulverizing as will pass 100 and in some, cases 200 mesh (40,000 holes to the square inch).

They reduce the hardest rocks and ores at surprisingly low cost, and are excellent grinders of many hard and some soft substances difficult for other machines.

Cement Clinker, Phosphate Rock, Granite, Quartz, Trap, Ores, Slag, Limestone, Lime, Cast Iron Chips, etc., etc., are among the numerous materials successfully ground in Ring-Roll Mills.

VALUE

The value of Vertical Ring and Roll Mills is best illustrated by the number of other Grinders they have displaced. Their supremacy is due to extraordinary durability, complete accessibility, and to much larger outputs attained with less power.

Sturtevant Ring-Roll Mills are supplied to responsible manufacturers to try in competition with any other Grinder, and the great success attending their introduction has been due to a superiority that appeals to every user as soon as the Mill begins to run. Capacity, accessibility and durability make firm friends in all the years that follow.

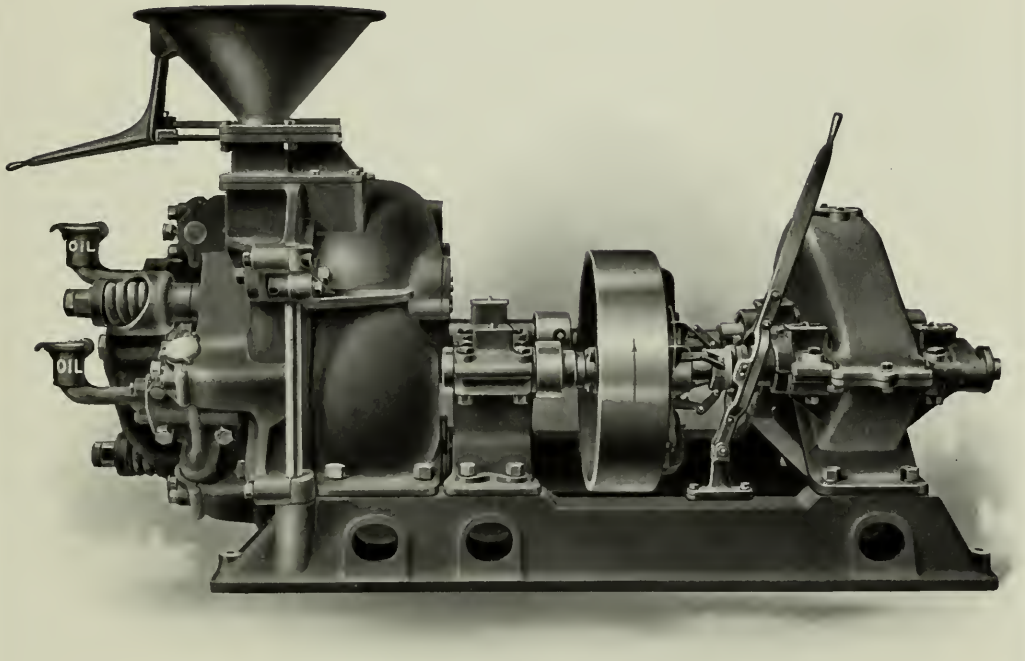
Set a Sturtevant Mill alongside of any other grinding machine and see how much it surpasses the other in every form of usefulness.

CAPACITIES
5 SIZES

The large Duplex Ring-Roll Mills grind phosphate Rock to from 60 to 80 mesh and finer, and have attained a capacity of 24 tons per hour. Cement Clinker (to 20 mesh and finer) 80 to 130 bbls. per hour (16 to 26 tons).

The smallest Ring-Roll Mill (No. 0 Single Roll), has done from one to three tons per hour, on different materials and is intended for smallest producers.

STURTEVANT OPEN DOOR RING-ROLL MILL



Patented and Patents Pending

No. 1 Sturtevant "Open Door" Ring-Roll Pulverizer

These Mills are unlike any others; are protected by patents, and users are protected accordingly.

Notice the single belt drive, and friction clutch pulley. Carefully cut gears are encased from dust and run in a bath of oil.

POWER SAVED

The Rolls are mounted on Sturtevant Giant Roller Bearings (patent applied for).
They never get hot. Save one-half the oil, require no attention,
and every user has noted Durability.

DESCRIPTION AND OPERATION

A steel anvil ring is secured in a head supported and revolved by a horizontal shaft. Against the inner face of this ring the hammer rolls are equally and elastically pressed with great force and revolved by the ring. This is all.

Substances to be ground are fed (up to 1½ inch sizes) to the anvil face of the rotating ring and held thereto by centrifugal force, and these rocks are crushed by being drawn under the hammer rolls as the Ring revolves.

The rolls and their mountings are carried by the massive door, and the rolls swing away from the ring with the door when it is opened. The roll shafts are as large as those of a locomotive driver's, and the elastic crushing pressures they give to the rolls are greater. One adjusting screw on the outside of the door regulates the roll forces and gives the hammer rolls absolutely equal and opposite pressures against the Anvil Ring (see Page 8), of from 20,000 to 60,000 lbs. This no rock can withstand.

The revolving anvil ring's face is always covered by a thick layer of rocks fed thereto for grinding. Thus a naked anvil ring is never exposed to the hammer rolls. Rocks are crushed down upon other rocks (between anvil ring and hammer roll) producing a maximum of fines, which are crushed off of both sides of the ring and escape to the bottom of the mill case, and therefrom are elevated to a Newaygo Separator; and the tailings separated by the Newaygo are returned to the ring (with fresh feed) for further reduction. Thus the Mill is always breaking down coarse and fine rocks upon one another.

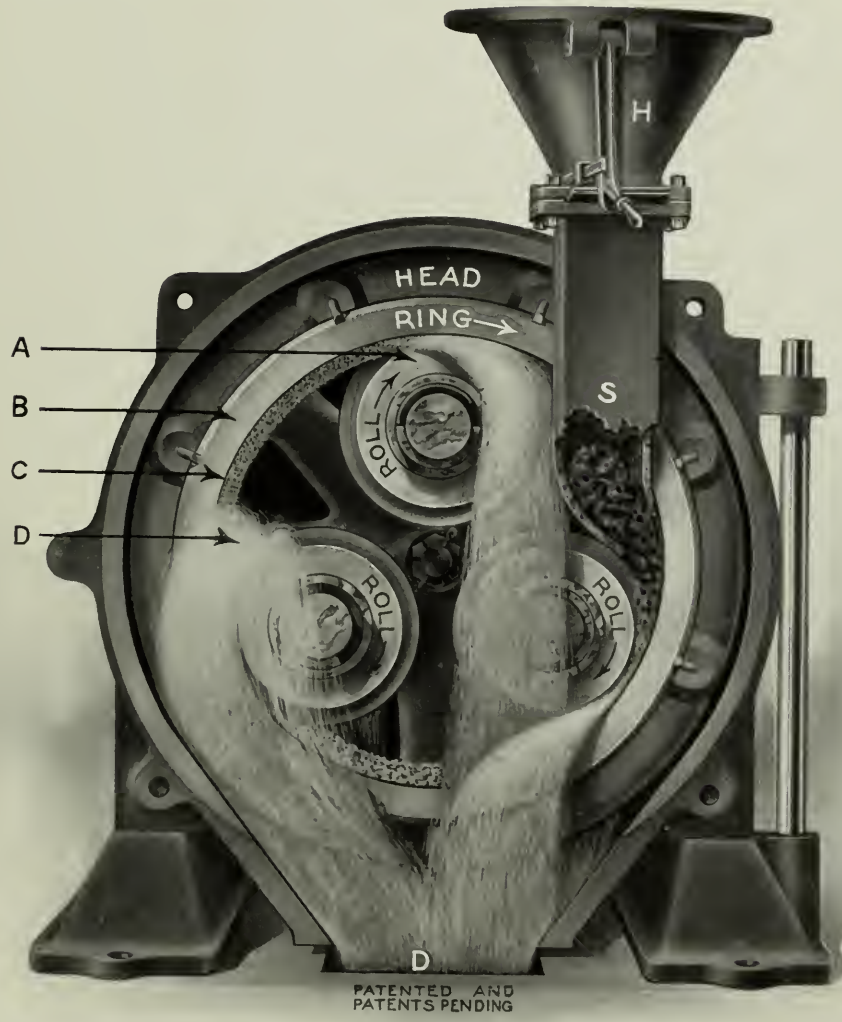
As the hammer rolls crush the pieces of rock destructively upon each other it is fair to assert that Ring-Roll Mills almost completely compel rocks to abrade and crush one another, and they do this with astonishing effectiveness.

The opposite cut shows the Ring-Roll Mill in operation. The Sturtevant anvil ring, unlike all others, drives the hammer rolls, and draws the rocks under them to be crushed. Like rolls in the bearings of an automobile, they cause easy running.

No other Grinding Mill has so few wearing parts, and these are subject only to rolling friction.

Sturtevant Roller Bearings always run cool. Another reason why Sturtevant Mills run easier than any other; with reduced friction they do not heat.

STURTEVANT OPEN DOOR RING-ROLL MILL

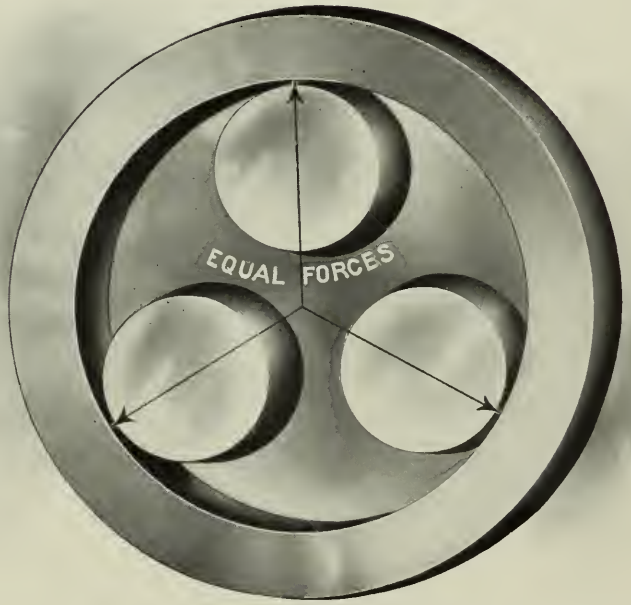


Interior View

Feed enters hopper at "**H**".
Spout "**S**" delivers it at centre of concave revolving ring where it is strongly held by centrifugal force until crushed off by the Rolls, discharging at "**D**".

A Spring pressed Rolls driven by centrifugally held material.
B Rigid revolving Ring drives all three Rolls on 1" layer of centrifugally held material.
C Thick layer of centrifugally held, unground rock.
D Ground rock crushed off of both sides of Ring.

STURTEVANT OPEN DOOR RING-ROLL MILL

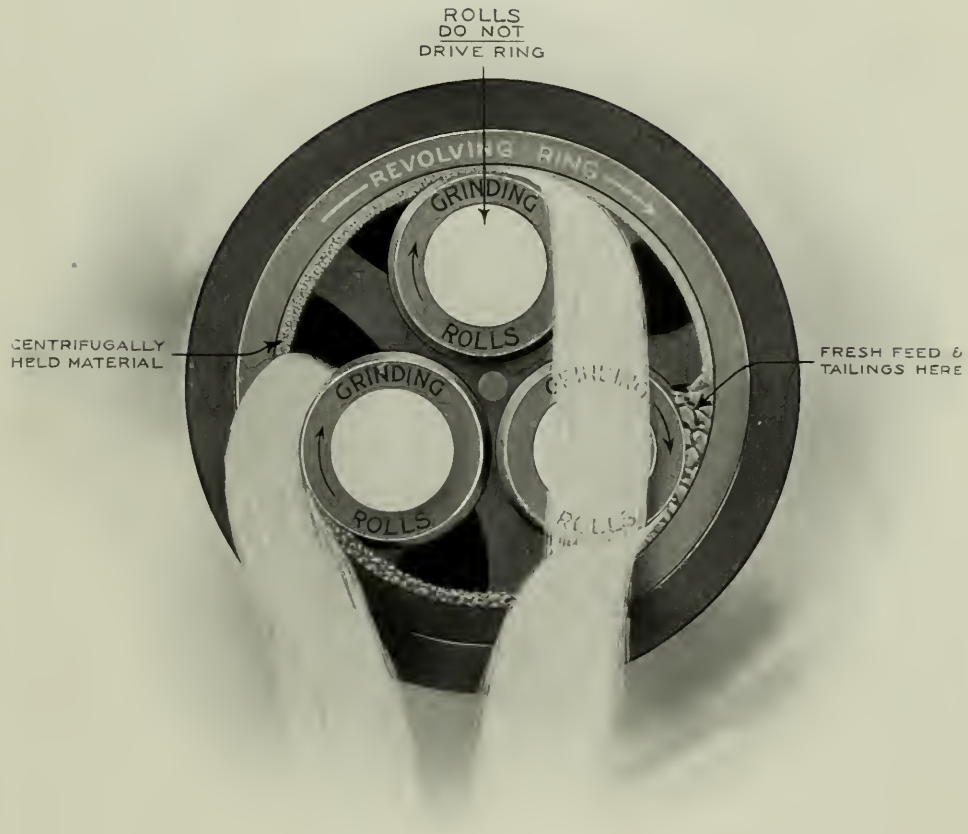


The arrows in this cut indicate the exactly equal and opposite pressures of the hammer rolls against the anvil ring's inner face. None of the crushing stresses are taken by the head shaft, which merely supports and revolves the head

The enormous crushing power of these hammer rolls is greater than that of locomotive wheels, and this power is applied so that they balance and offset one another, and they can therefore pass over iron or uncrushable substances with shocks so completely cushioned that crystallization or shaft breakage has never occurred.

The simple and effective roll and ring action should be noted; it will not be found elsewhere. Because the rolls cannot touch the ring, protected as its face is by the thick layer of material on it, wear of the ring is almost nil; and because—unlike others—Sturtevant Rolls cannot slip, nor the ring wabble, wear of these surfaces is of comparatively slight consequence. This mill cannot be clogged however rapid the feed may be.

STURTEVANT OPEN DOOR RING-ROLL MILL



DURABILITY

A ring is said by users to sometimes last two years, and on some materials much longer. At all events, the wear of either ring or rolls is so small as to be seldom complained of, even in the reduction of hard materials.

A new ring and three rolls are said to make an old Sturtevant Mill as good as new, because it has none of the parts which in other Mills are subject to much wear. That Sturtevant parts have extraordinary endurance is because they run with smallest friction. Friction means wear. There is no friction between the parts of the Sturtevant, because its rock reducers never touch each other, owing to the thick coating of rocks between them, and the rolls roll over the rocks with no slip whatsoever.

Sturtevant Roller Bearings are said by all users to LAST. They save Power, Oil, and Attention, and never run Hot.

STURTEVANT "OPEN DOOR" ACCESSIBILITY

(See opposite cut.)

This important patented improvement is only found in Sturtevant Mills. The whole front opens like the massive door of a safe, and carries the rolls, and all their parts, entirely outside of the Mill, exposing the whole interior. Then the ring, which is the only working part left inside, can be quickly reached. When the door closes, the rolls swing back into the interior space of the ring, and then all three rolls may be equally and elastically pressed by one screw (on the outside of the door) towards the anvil ring's face as strongly as is needed to crush any grindable substance. The ring discharges on both sides of the concave track.

TIME SAVED

It takes at least ten hours to open up the grinding parts of other Mills, and generally a day and a half to remove and replace them. The Sturtevant door can be opened and the rolls swung away from the ring in ten minutes, and the ring, too, removed in half an hour.

The rolls are supported with abundant strength by the massive door. The hammer rolls are swung into immense and equal elastic crushing pressures by their spring-actuated steel bell levers, operated by turning the outside adjusting screw on the door. That parts can be removed and replaced so quickly is because of the Door, and because no shaft, or belt, or ring, or bearing, has to be disturbed.

The rolls of the Sturtevant Mill may be held away from the ring when the ring runs empty, because they do not support it. This is a considerable advantage. The naked surfaces of ring and rolls would otherwise at this time injure one another, as they do in other mills, when allowed to run empty.

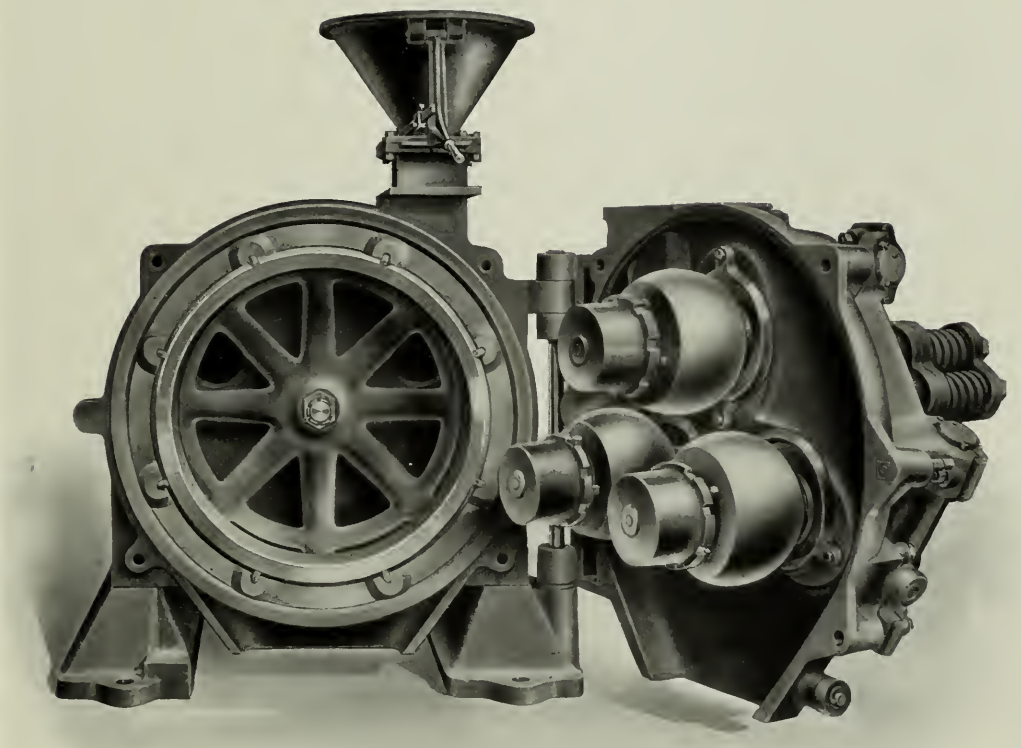
Please note that the driving shaft carries only the weight of the head and ring, which it revolves. The weight of the rolls is entirely carried on the door. The roll pressures are exactly equal and opposite, and the stresses exactly balance and offset each other. They are like the rolls of a tube expander that press equally and outwardly towards the tube, but give no support to the tube.

Rocks have very slight cutting effect on tires, or rollers that really roll and do not drive the ring and slip. Sturtevant Rolls are large, and run over the rock on the ring as easily as automobile wheels on a road, but, unlike the soft tires, these surfaces are of the hardest.

It is a well established fact that no other Grinder has compared favorably in endurance or output with these Mills having the vertical anvil ring whereon rock is held by centrifugal force, and crushed by the enormous hammer action of rolls running on it. In a Sturtevant Mill, as before stated, the rocks are pulled under the rolls as the ring revolves. No other hammer and anvil action can be equally frictionless, and no other is as effective.

Sturtevant Rolls now have Roller Bearings (patent applied for). Every user says they LAST—and save an astonishing amount of Power and Oil, and NEVER GET HOT.

STURTEVANT OPEN DOOR RING-ROLL MILL



Patented and Patents Pending

No. 2 Sturtevant "Open Door" Ring-Roll Mill
Absolute Accessibility

A TEN MINUTE JOB

Remove four bolts and open the door.
No other grinding mill has this valuable feature.
It is seen that the door carries the rolls outside.

The rolls turn on Sturtevant Giant Roller Bearings. Save Power. Save half the usual amount of oil, and require no attention. They take care of themselves, and LAST as users have discovered.

Probably the most notable improvement of 1914 Ring-Roll Mills is the Sturtevant Giant Roller Bearings upon which each crushing roll is mounted. The rolls turn in a bath of oil in a dust proof chamber from which oil does not escape. They cannot be heated by friction; and temperatures of hot clinker do not feaze them. They need no watching. If the oil reservoirs are kept full, they can be depended on to take care of themselves. We do not shout that they save power; for nobody doubts it. That they use only one-half as much oil as other bearings you will easily believe. And that they last, our old customers affirm.

During the past year and a half, that Sturtevant Giant Roller Bearings have been in use every one has proved satisfactory, and because the parts have not broken or given trouble, we are satisfied to adopt them for 1914 Ring-Roll Mills, and unless otherwise ordered these will be supplied.

They are interchangeable with the splendid bronze bearings they replace. The same "shaft holders" receive either.

The automobile has taught how to reduce frictional losses for small shafts. The Sturtevant Mill Company points the way towards frictionless bearings for large shafts, carrying heaviest loads.

Please remember the Sturtevant Giant Roller Bearings never heat, and have proved the most durable large Mill bearings we have ever used.

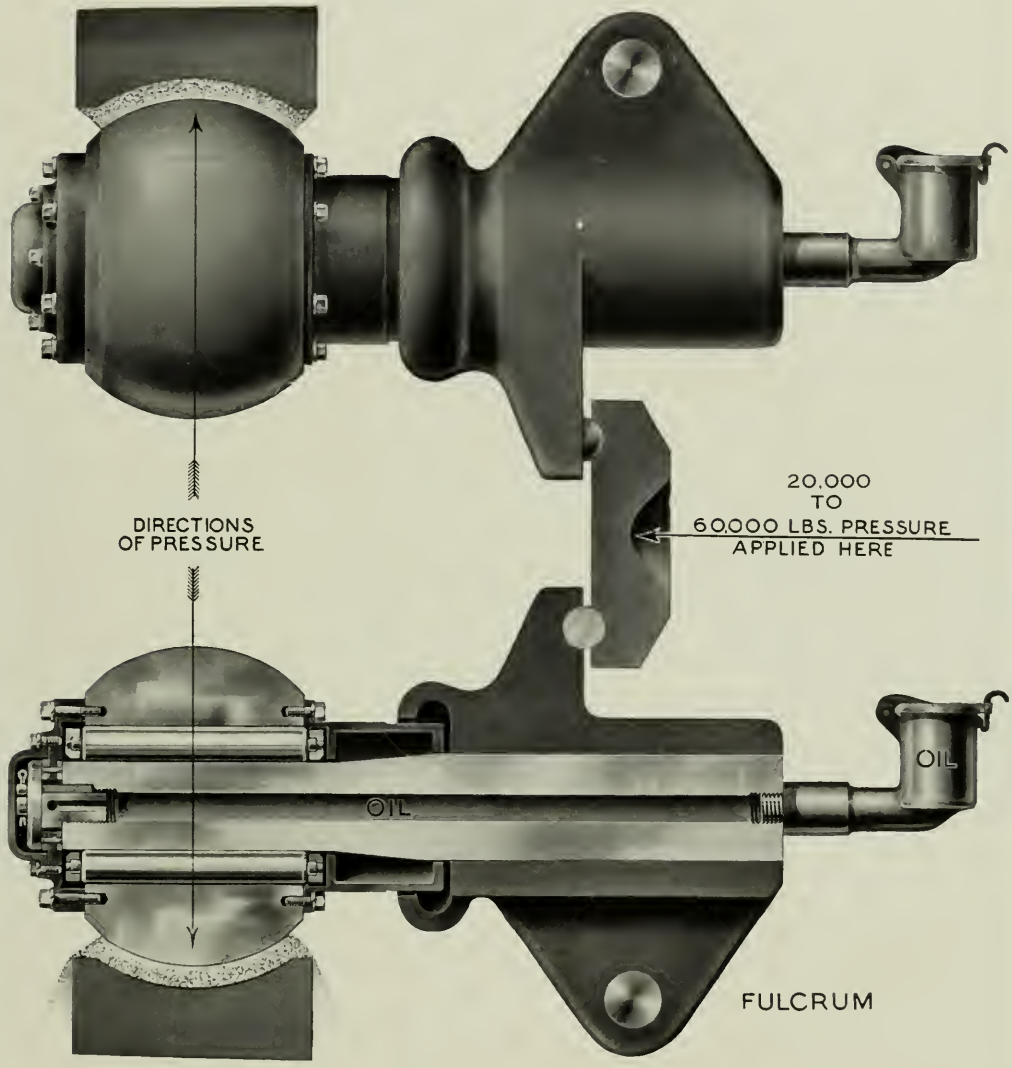
CRUSHING ACTION

The opposite cut illustrates part of an anvil ring with its coating of rocks held by centrifugal force while the hammer roll is crushing them. The rock always protects the ring from contact with rolls.

The roll-faces wheel, like a car wheel, on the rock—and each roll centre revolves on the giant rollers that bear on the massive rigid shaft. The shaft is a steel forging sometimes as large as a locomotive's driving wheel axle. The Roll contains the "Giant Rollers." The bearings are therefore fool proof, and dust proof, and as nearly indestructible as can be devised. No appliance supplied by us has ever been so thoroughly appreciated by users. They cost you nothing, because they are included in new mills. The shaft, as before, is held dead in the powerful grip of the steel clamp of its elastic bell lever.

The immense elastic crushing force is applied, and divided equally between the bell levers, by the balance washer (see opposite page). The rolls may be pressed with a force of from 20,000 to 60,000 lbs. towards the ring face, and upon the material thereon, which is drawn under the rolls by ring rotations. No crushable substance between anvil ring and hammer roll can escape reduction.

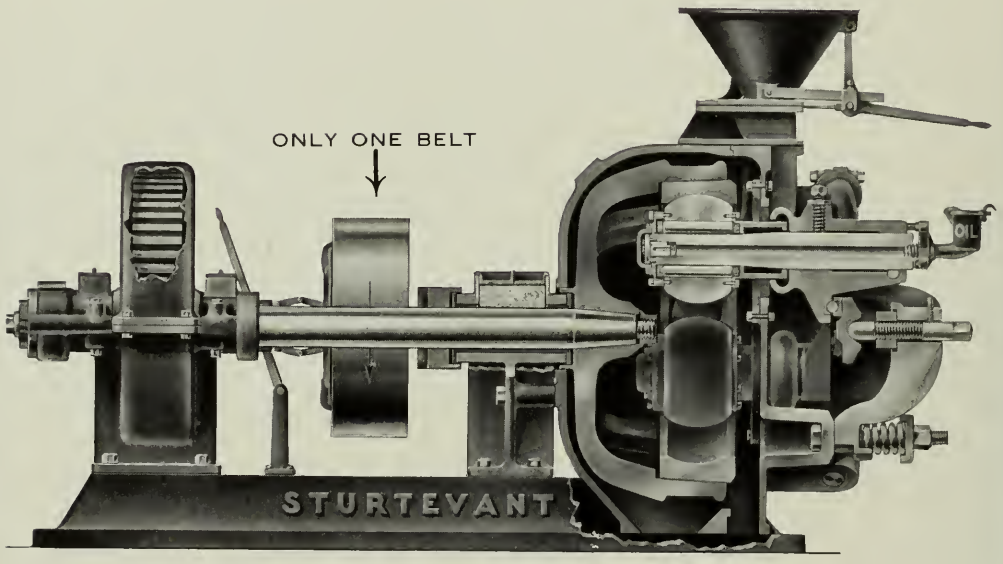
STURTEVANT OPEN DOOR RING-ROLL MILL



Sturtevant Rolls are exclusive features of Sturtevant Mills. The ring, and the material thereon, is held in perfect running balance. Therefore, there is no wabble and no shocks are given the ring's driving and supporting shaft, however active the hammer rolls may be; because when one roll jumps (hammers), all the others give equal and opposite balancing strokes towards the anvil ring. It is to this remarkably effective balanced hammer and anvil action that the large outputs of this Mill are in no small degree due. Because the rollers act exactly like the roller bearings of an automobile axle easiest running is accounted for. See cut of ring and three roller bearings, page 8.

It will be noted that 1914 rolls are themselves mounted on Sturtevant Giant Rollers. Since the roller rolls on the rock, and also rolls on the shaft—a double roller action is produced. Thus is constituted the most nearly frictionless bearing ever used in rock reducing machines.

STURTEVANT OPEN DOOR RING-ROLL MILL



Patented and Patents Pending

Please note that the roll shafts do not turn, but each roll turns on its Giant Roller Bearing on the dead shaft which is held in the tremendous grip of its elastically-pressed bell lever. We repeat this point several times because it is a highly important feature in giving supremacy to Ring-Roll Mills.

HAS NO WABBLING RING

It can be seen that this Mill has no features common to any other; no other has a ring that drives its rolls. It has no loose ring, no wabbling ring, nor roll-supported ring. A Sturtevant ring always runs true and its rolls cannot run across and cramp or stall, or break a shaft. No shaft has ever broken.

There is no waste of power by slip in Sturtevant Ring-Roll Mills. The Sturtevant Mill has only one driving belt. It runs so easily on its roller bearings that one man can rotate the largest. Two belts can never be kept to pull equally, and are clumsy contrivances, and they incur double costs. Side pulls and wear do not commend them.

These are the Mills that last and grind fast, and we invite competitors to side by side trials; but they do not come any more. The new Sturtevants now have a capacity twice that of those heretofore made, and can produce on phosphates to 60 mesh as high as 24 tons per hour, or on cement an output of 130 bbls, to 20 mesh.

STURTEVANT OPEN DOOR RING-ROLL MILL

This illustration shows the grinding action of the roll upon the material, held by centrifugal force to the ring. Notice the discharge on both sides of the ring. Also notice that as the Sturtevant ring's width is greater than that of the roll's all of the roll's crushing surface is effective.

New Sturtevant Ring-Roll Mills have rolls that contain the Sturtevant Giant Rollers, that never get hot, OIL is saved—and POWER. No attention required, except to fill oil cups once a day. And no user has complained of wear.

THE FRICTIONLESS STURTEVANT

The Rolls roll on the material, and the Roll centres roll on roller bearings—can any device be more nearly frictionless.

STURTEVANT OPEN DOOR RING-ROLL MILLS ARE MADE IN FIVE SIZES

No. 0 Ring-Roll

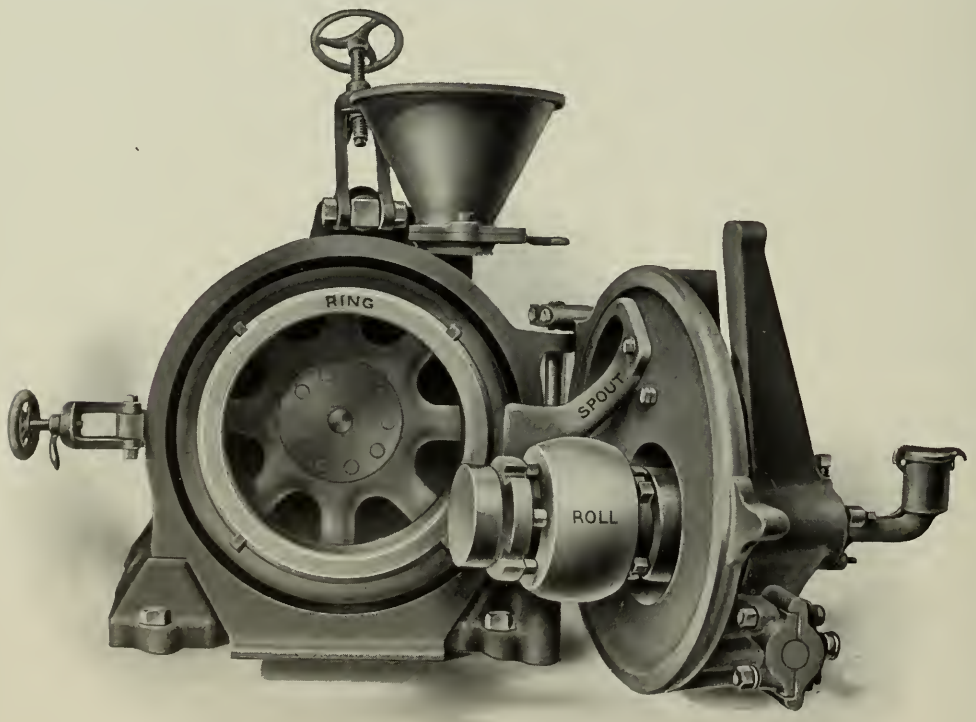
This little machine is built for moderate outputs and is similar in construction to the Nos. 1 and 2 shown and described in the preceding pages.

The size of its grinding surfaces are the same as the No. 1 Mill but instead of having three rolls it has one which simplifies the design and lessens the cost of manufacture, and thus the selling price is modified accordingly. Its output is approximately one-half that of the No. 1 size Mill. The power to operate is much reduced by the Sturtevant Giant Roller Bearings.

In durability, efficiency, and accessibility it is second to none and can grind any material economically that can be handled by the larger Ring-Roll Mills.

No. 1 and No. 2 Ring-Rolls

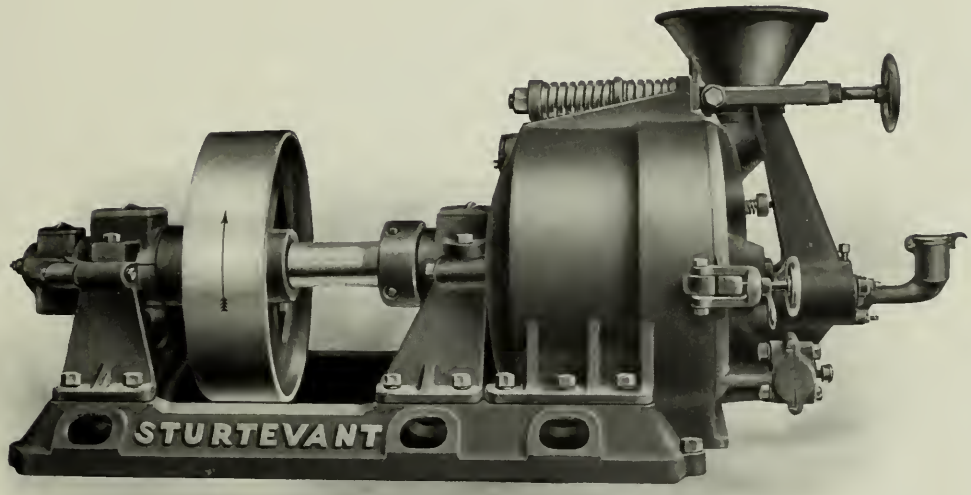
These machines have been shown and described in the preceding pages and full particulars are given in the specification table on page 20.



Patented and Patent Pending

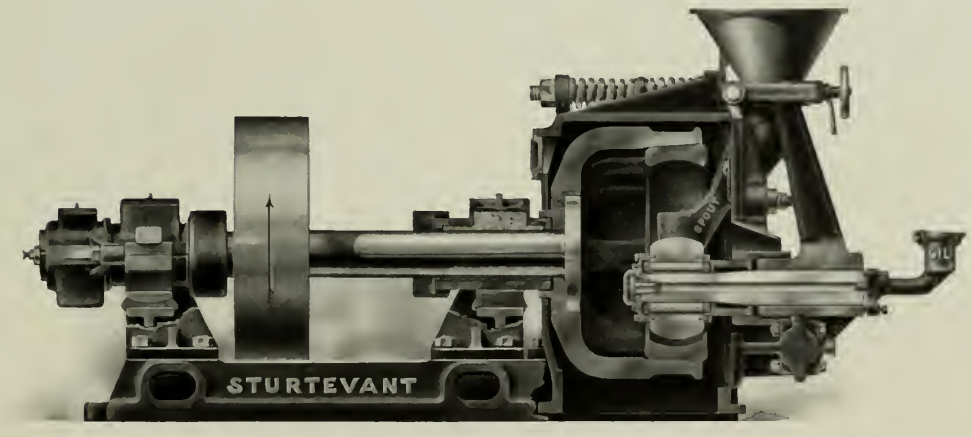
"Open Door" Accessibility of No. 0 Ring-Roll Mill

STURTEVANT OPEN DOOR RING-ROLL MILL



Patented and Patent Pending

No. 0 Ring-Roll Mill ready to run



Patented and Patent Pending

No. 0 Ring-Roll Mill showing interior and bearing construction

STURTEVANT DUPLEX RING-ROLL MILL

No. 1 and No. 2 Duplex Ring-Rolls

Large grinding units are now demanded by great producers and to meet these requirements Duplex Ring-Roll Mills have been designed. These remarkable machines have twice the output of the Single Ring-Roll Mills and in the No. 2 size, have much greater capacity than any other machines built, yet at the same time occupy only about two feet more space than the single machines; in fact, the same beds are used.

To give some idea of the outputs of these No. 2 Duplex giants, the following illustrations of what they have done may prove of interest:—

CEMENT CLINKER

To 20 mesh: 16 to 26 tons or 80 to 130 bbls. per hour
" 40 " 12 " 16 " " 60 " 80 " " "
" 60 " 8 " 10 " " 40 " 50 " " "
" 80 " 6 " 8 " " 30 " 40 " " "

PHOSPHATE ROCK

Tennessee to 60 mesh: 20 to 24 tons per hour
" 80 " 14 " 16 " " "
Florida Rock to 60 mesh: 14 to 16 tons per hour
" 80 " 10 " 12 " " "

LIMESTONE

To 20 mesh: 25 to 32 tons per hour
" 80 " 10 " 15 " " "

QUARTZ

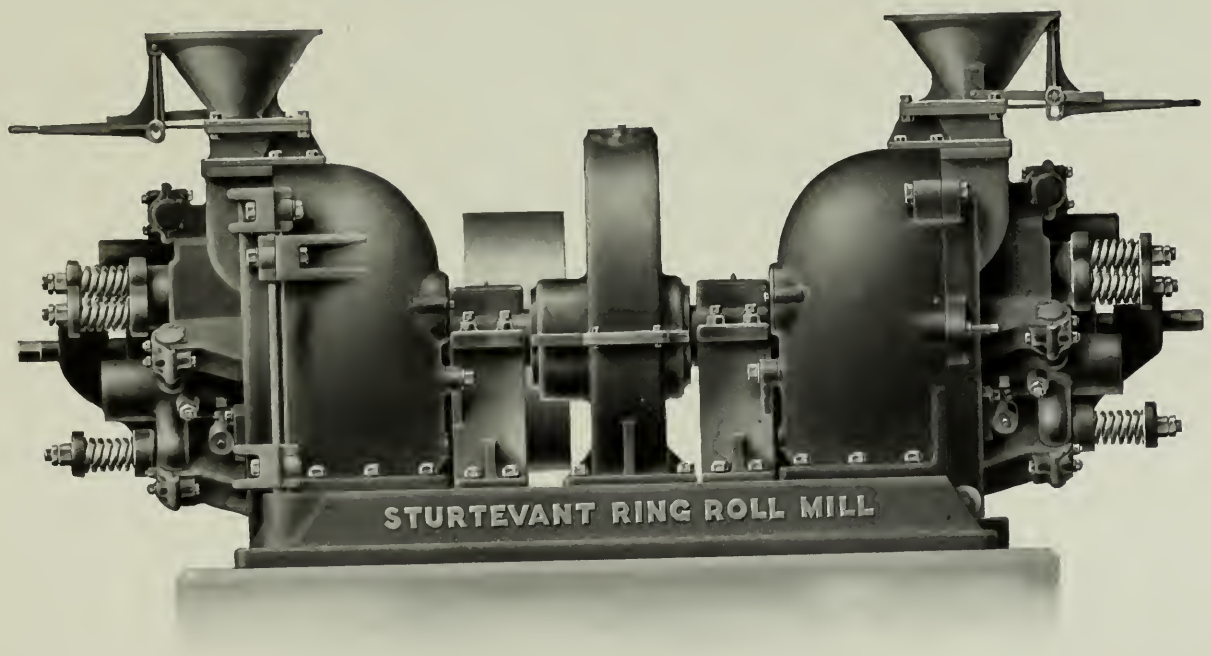
To 20 mesh: 15 to 20 tons per hour
" 50 " 10 " 12 " " "
" 100 " 6 " 10 " " "

The Duplex Ring-Roll Mill is attained by combining parts of two single Mills, as shown in illustration, on one base; a great many are in use because of the advantages attained. Each unit may be operated independently of the other.

ADVANTAGES OF DUPLEX CONSTRUCTION OVER SINGLE MILLS

Eight less bearings than two single Mills
One less gear than two single Mills
One less gear case and oil chamber than two single Mills
One less driving pulley than two single Mills
Only two feet more space used for twice the output
Only one short driving shaft vs. two in two single Mills

STURTEVANT "DUPLEX" RING-ROLL MILL



Patented and Patent Pending

The Largest Grinding Mill

Only one belt and eight less bearings

Capacity twice that of the largest single machine

Occupies only two feet more floor space than the single No. 2 Mill

All Ring-Roll Mills have, unless otherwise ordered, Sturtevant Giant Roller Bearings (patent applied for). Needless to say they are easy runners. Everybody has found them durable. Fill oil cups once a day. Each rolling roll wheels on the rock and rolls on its Giant Sturtevant Roller Bearing.

Advantages of Duplex Construction over single Mills

(Continued from Page 18)

Only one belt v. s. two in two single Mills.
Only one elevator pit v. s. two in two single Mills.
Only one elevator v. s. two in two single Mills.
Only one conveyor (if any) v. s. two in two single Mills.
Perfect balance of heads.
Thrust eliminated.
A large saving in weight.
Less friction.
Less power to operate.
Less wear and tear.
Has twice the output of a single Mill.
Costs less to buy, transport, erect and operate.
Foundations cost half as much as for two mills.

In fact, the Duplex Ring-Roll Mill is more perfect mechanically than any single Mill can be, as is shown above.

One end or the other end may be kept in operation, or both ends at once.

One end may be repaired while the other is at work, with one door open and the other shut.

In other words, it is two units working as one, or independently of each other. It has all the advantages of one large Grinder without its disadvantages.

It is an ideal proposition for large producers.

Specifications—Sturtevant Ring-Roll Mills

Size	Code Word	Ring inches Dia. and Face	Rolls inches Dia. and Face	Pulley inches Dia. and Face	Pulley Speed Rev. per M	Ring Speed Rev. per M	Horse Power Approx.	Dimensions over all Approximate						Approx. Net Weight lbs.	Approx. Gross Weight lbs.	Approx. Capacity tons per hour
								Width		Length		Height				
								ft.	in.	ft.	in.	ft.	in.			
No. 0	RINGBE	24 x 7	14 x 7	36 x 10	125	125	8 to 12	4	0	10	1½	4	6	7,000	8,000	Write for capacities stating material and fineness desired. These requirements vary so that it is impossible to give them here.
								*6	4	*11	3					
No. 1	RINGO	33 x 7	14 x 7	30 x 8	320	80	15 to 20	5	3½	11	0	5	10½	13,000	14,000	
								*8	10½	*12	4					
No. 2	RINGAL	44 x 12	18 x 10	36 x 12	300	63	35 to 45	6	11	13	5	7	4	27,000	29,000	
								*10	6	*15	6					
No. 1 DUPLEX	RINGDU	33 x 7	14 x 7	30 x 12	375	80	30 to 40	6	0	12	8	6	2	21,000	24,000	
								†13	0	*15	8					
No. 2 DUPLEX	RING-DEX	44 x 12	18 x 10	42 x 20	325	64	70 to 90	7	8	16	4	7	6	45,000	50,000	
								†15	3	*20	2½					

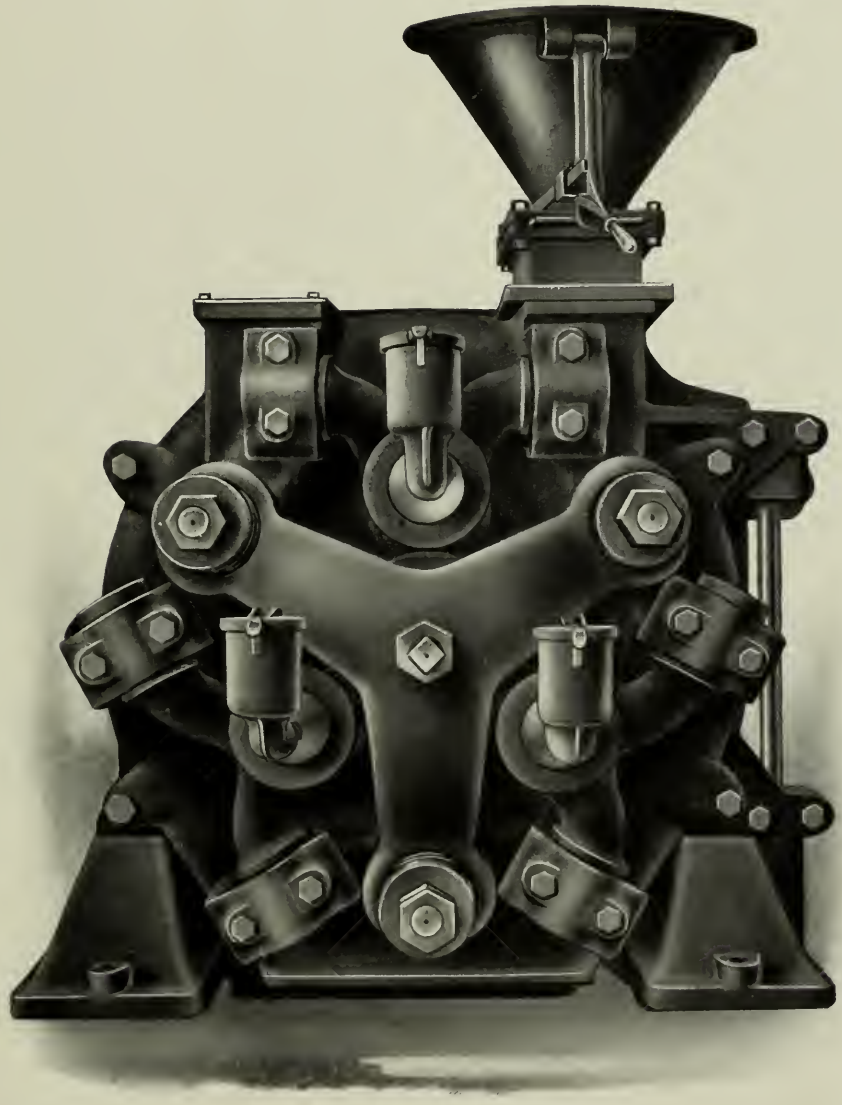
* With door open to 120°
† " " doors " " "

ELEVATOR TO BE USED WITH RING-ROLL MILL

WITH No. 0		RING-ROLL USE BUCKETS		10" x 6"	
" " 1		" " "		12" x 8"	
" " 2		" " "		14" x 8"	
" " 1	DUPLEX	" " "		14" x 8"	continuous
" " 2	"	" " "		16" x 8"	"

PRICES AND DESIGNS SUBJECT TO CHANGE WITHOUT NOTICE

STURTEVANT OPEN DOOR RING-ROLL MILL



Patented and Patent Pending

Front of Ring-Roll Mill, Door Closed, Ready to Run

ADVANTAGES OF OUTSIDE-OF-MILL SEPARATION

Grinding Mills are of two classes: first, those finishing their product in the machine; and, second, those having outside separators that take the whole output and separate, and return the unfinished material to the Mill for re-grinding.

At first thought it would seem that finishing immediately in the Mill is a great advantage; but experience has taught otherwise. The following reasons exhibit the advantages of outside the Mill separation:

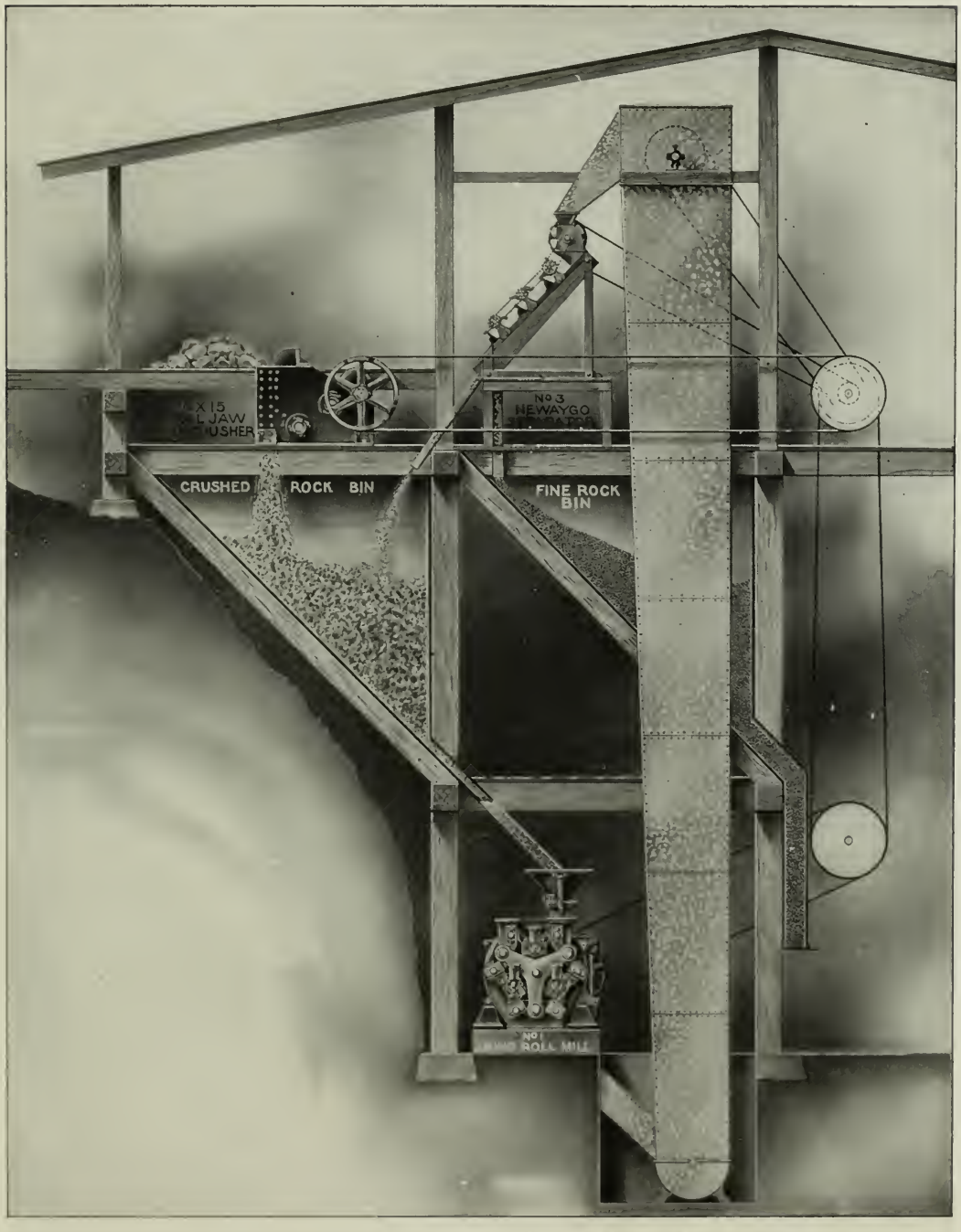
A mill of large capacity discharging through internal Screens cannot possibly be efficient, for the reason that it cannot have sufficient screening area in its interior spaces to discharge all finished material immediately. That which is finished and yet remains in the Mill cushions the violent, effective action of grinding members, and obstructs and forces them to plow through again and again, and pass over a mass of fines that have already been sufficiently reduced, and should have been promptly discharged. Much power is thus wasted. Serious wear and tear is always seen in mills partly clogged by fines. Inside screens also suffer much themselves from abrasion. Rock is thrown violently against them, and a delicate screen cannot long endure rough treatment, or the severe Mill vibration which soon tears the screen. Exposed inside screens require frequent replacement, and are always a source of much trouble and expense. A mill screen should not only be outside the mill, but it should be large.

The vertical Ring-Roll Mill uses large outside screens only; no fines remain in the Mill to be acted on a second time. Its rolls never plow through fines already sufficiently pulverized. The rolls work on rock upon all of which work must be done; hence maximum efficiency and extraordinary capacity.

Screens of the Newaygo type have ample screening surface, the most efficient vibration, and, what is highly advantageous, they all use coarse wire to produce finest products. No internal screen can compare with this in durability or ability to withstand, and handle a large output. All Mills should use them.

Actually tested, by removing the screens from a Ball Mill, and using Newaygos in their stead, the capacity of the Mill increased more than one-third, and the power diminished in like proportion. This has also proved true of Ring and Roll Mills of the horizontal stationary ring types. In fact, it is only necessary to examine the inside of any Mill having internal screens to see the amount of finished material obstructing and cushioning its working members.

STURTEVANT OPEN DOOR RING-ROLL MILL



Sturtevant Crushing, Grinding and Screening Plant

INFORMATION FROM USERS

Grinding Portland Cement Clinker

These figures no doubt will vary materially in different plants according to the hardness of the clinker.

UNIT GENERALLY IN USE

Cost of Reducing Portland Cement Clinker, grinding to 20 mesh in one Ring-Roll Mill and finishing in three Tube Mills

UNIT RING-ROLL MILL

Wear per year (actual)	$50 to $135
Year after year (estimate)	$300
Output per hour to 20 mesh (average) bbls.	40
Output per yr. to 20 mesh (365 dys.) bbls.	350,400
Horse Power (average)	40
Wear and tear cost per bbl.	$.00086
Horse Power per bbl.	1.

ELEVATOR

Wear per year (estimate)	$50
Horse Power	approx. 6
Wear and tear cost per bbl.	$.00014
Horse Power per bbl.	.15

TWO NEWAYGO SEPARATORS

Wear per year (average)	$160
Output per hour	bbls., 40
Output per year (365 days)	bbls., 350,400
Horse Power (actual)	2
Wear and tear cost per bbl.	.00045
Horse Power per bbl.	.05

THREE TUBE MILLS (20 mesh feed)

Wear per year (actual) each $350	$1,050
Output per hr. (ground to finish) each 13⅓ bbls.	40
Output per year (ground to finish)	bbls., 350,400
Horse Power (average) each 100	300
Wear and tear cost per bbl.	$.003
*Horse Power per bbl.	7.5

TOTAL FOR UNIT AS ABOVE

Wear and Tear Cost Per Bbl.

No. 2 Ring Roll Mill	$.00086
Elevator	.00014
No. 3 Newaygo Separators	.00045
3—6′ x 18′ Tube Mills	.003
Total cost per bbl. for the unit	$.00445

Horse Power Per Bbl.

No. 2 Ring-Roll Mill	1.000
Elevator	.15
No. 3 Newaygo Separators	.05
3—6 ft. x 18 ft. Tube Mills	7.50
Total Horse Power per bbl. for the unit	8.70

THE UNIT WE RECOMMEND

Grind to 40 mesh in Duplex Ring-Roll Mill, then finish with two Tube Mills, with the following results:

No. 2 DUPLEX RING-ROLL MILL

Wear per year (estimate)	$600
Output per hr. to 40 mesh	bbls., 60
Output per yr.(365 dys.) (fig.av.60 bbls.)	bbls., 525,600
Horse Power	80
Wear and tear cost per bbl.	$.00114
Horse Power per bbl.	1.33

ELEVATOR

Wear per year (estimated)	$50
Horse Power	approx. 6
Wear and tear cost per bbl.	$.000095
Horse Power per bbl.	.1

NEWAYGO SEPARATORS

Wear per yr.(estimated) 4 screens at $80 each	$320
Output per hour	bbls. 60
Output per yr.(365 dys.)(fig.av.60 bbls.)	bbls., 525,600
Horse Power (actual) (1 each)	4
Wear and tear cost per bbl.	$.00061
Horse Power per bbl.	.0666

TWO TUBE MILLS (40 mesh feed)

Wear per year	$700
Output per hr. (83% 200 mesh)	average—bbls., 60
Output per year (83% 200 mesh)	bbls., 525,600
Horse Power	200
Wear and tear cost per bbl.	$.00133
Horse Power per bbl.	3.33

TOTAL FOR UNIT AS ABOVE

Wear and Tear Cost Per Bbl.

No. 2 Duplex Ring-Roll Mill	$.00114
Elevator	.00009
4-No. 3 Newaygo Separators	.00061
2—6′ x 18′ Tube Mills	.00133
Total cost per bbl. for the unit	$.00317

Horse Power Per Bbl.

No. 2 Duplex Ring-Roll Mill	1.33
Elevator	.10
4-No. 3 Newaygo Separators	.066
2—6′ x 18′ Tube Mills	3.33
Total Horse Power per bbl. for the unit	4.826

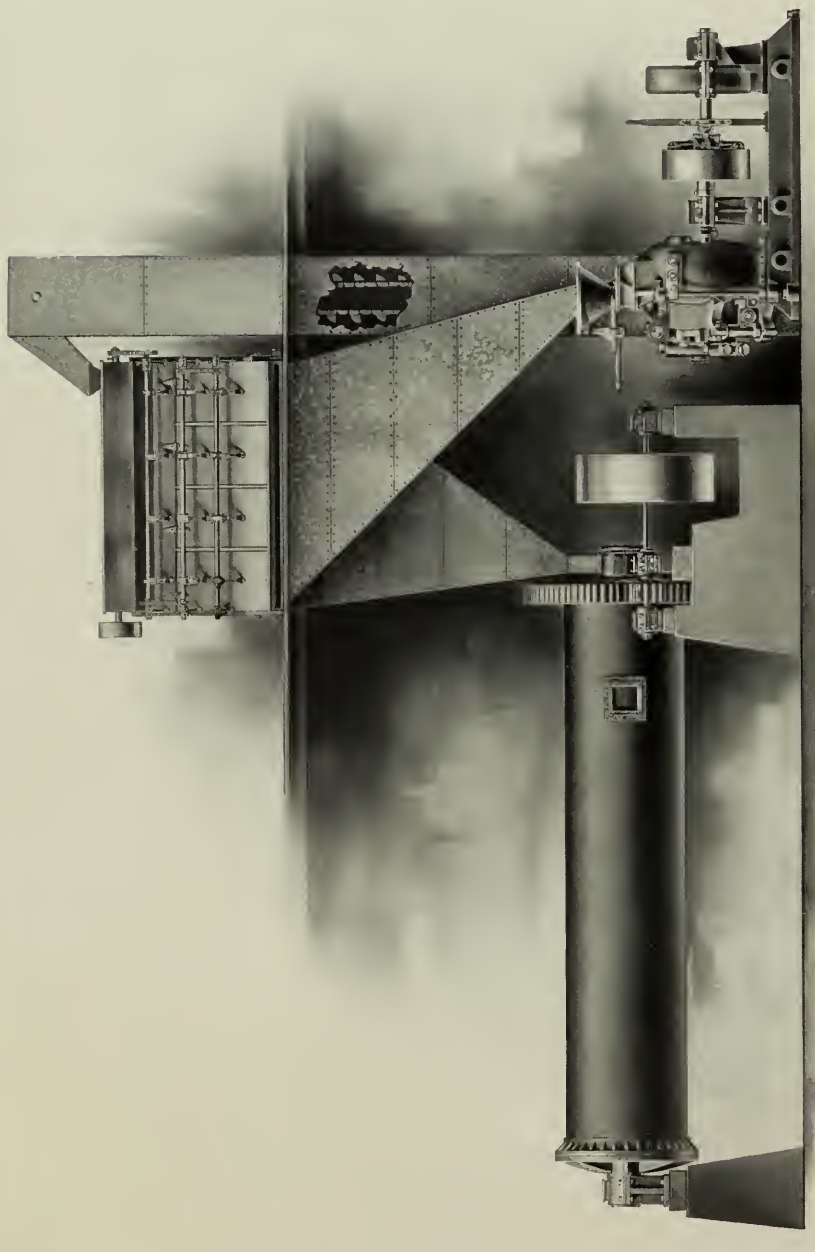
*Note the difference in Tube Mill power per bbl. in the two columns:—

The ones fed with 20 mesh clinker being 7.5 H. P.
And the ones fed with 40 mesh clinker being 3.33 H. P.
or a difference of 4.17 H. P. per bbl.

STURTEVANT OPEN DOOR RING-ROLL MILL

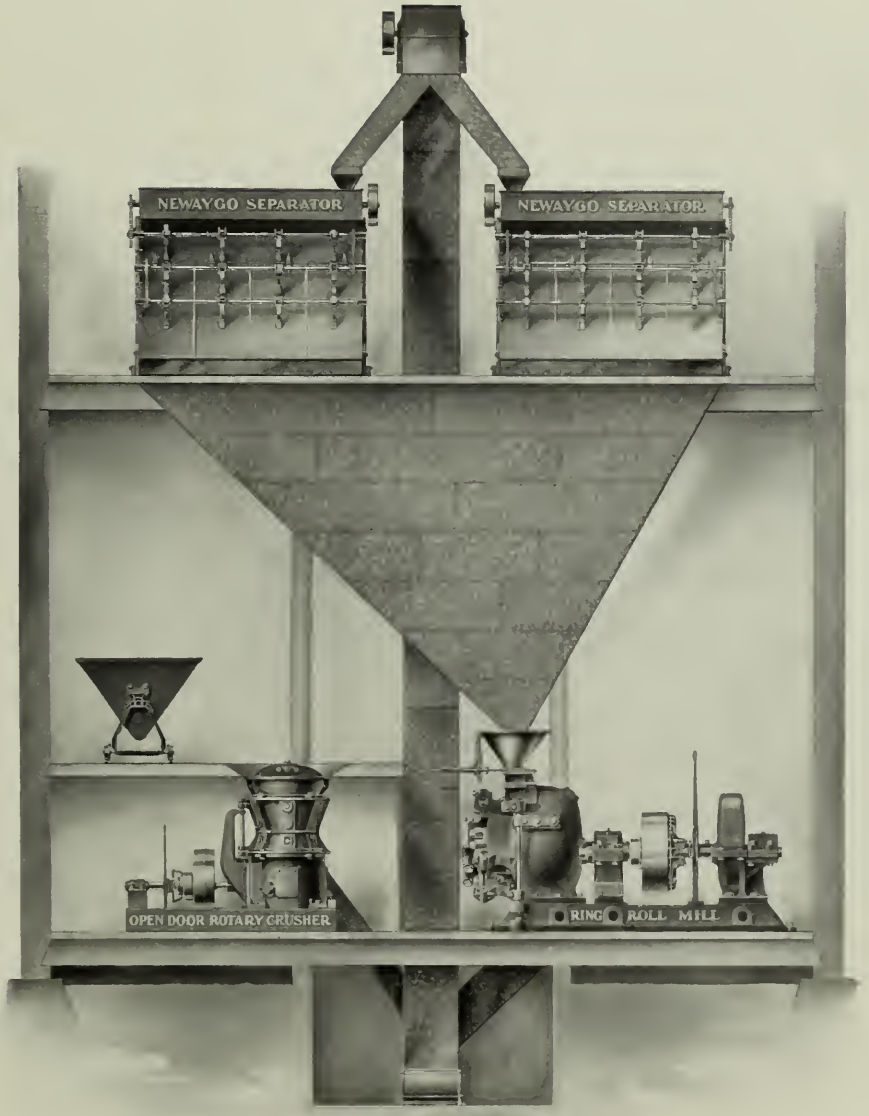
Sturtevant Cement Grinding Unit
Consisting of No. 2 Duplex Ring-Roll Mill, Two No. 3 Newaygo Screens, One Tube Mill
(Four Newaygo Screens should be Used)

STURTEVANT OPEN DOOR RING-ROLL MILL



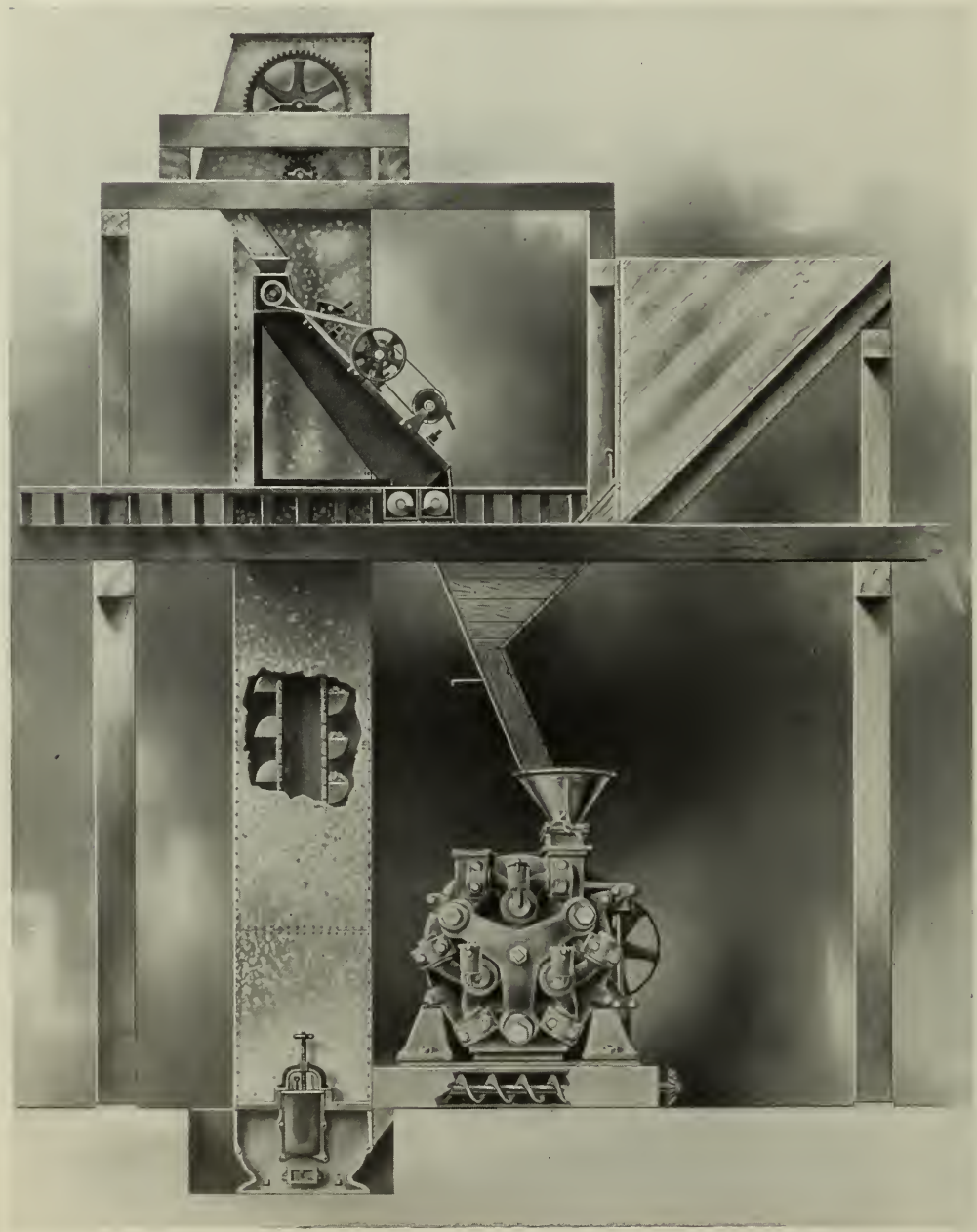
Sturtevant Cement Grinding Unit
Consisting of No. 2 Ring-Roll Mill, No. 3 Newaygo Screen and Tube Mill
(Two Newaygo Screens should be used)

STURTEVANT OPEN DOOR RING-ROLL MILL



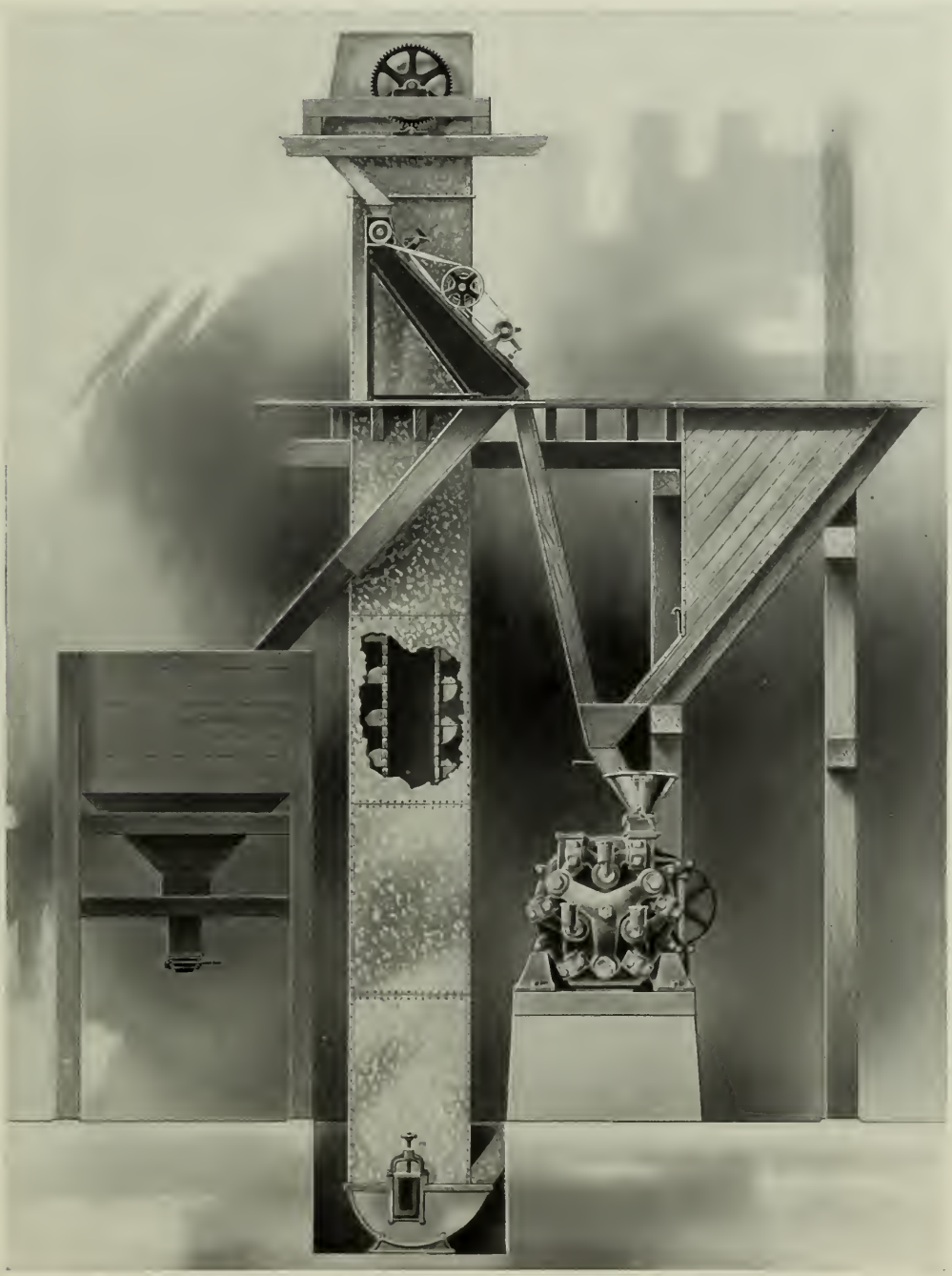
Sturtevant Crushing, Grinding and Screening Plant
Consisting of "Open Door" Rotary Fine Crusher, Ring-Roll Mill,
Newaygo Separators. Gravity Spouting

STURTEVANT OPEN DOOR RING-ROLL MILL



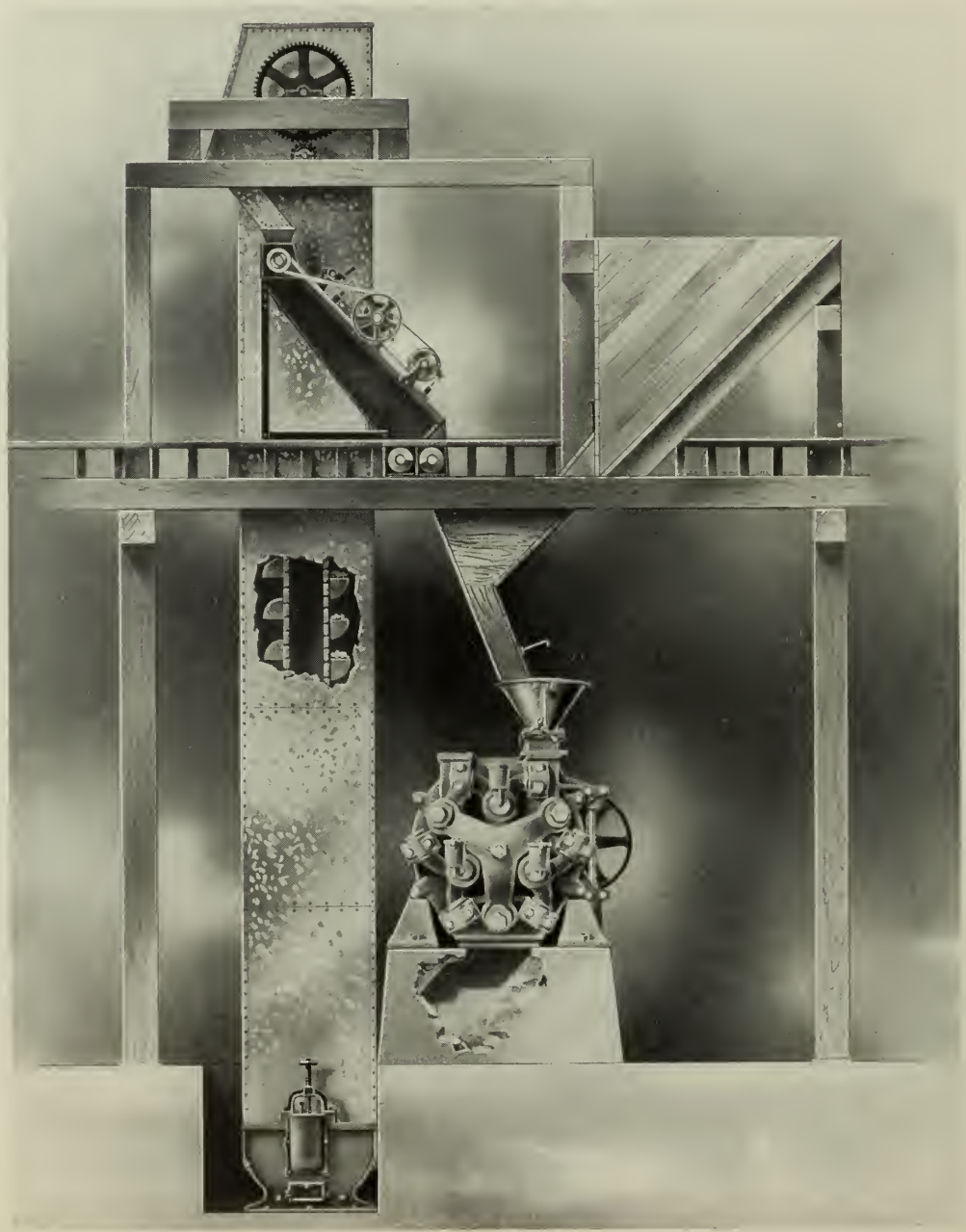
Sturtevant Grinding and Screening Plant, Consisting of Ring-Roll Mill and Newaygo Screen. Conveyor from Mill to Elevator and from Screen to Finished Material Bin. Tailings Back to Mill

STURTEVANT OPEN DOOR RING-ROLL MILL



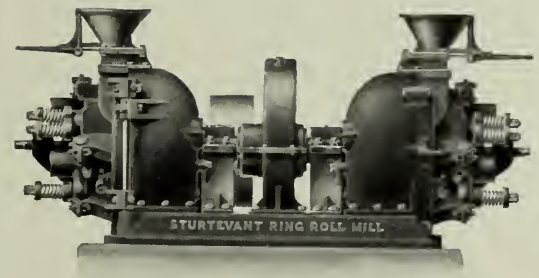
Sturtevant Grinding and Screening Plant, Consisting of Ring-Roll Mill and Newaygo Screen. Gravity Spouting

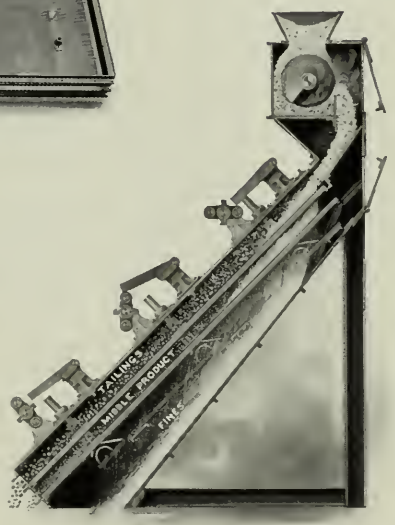
STURTEVANT OPEN DOOR RING-ROLL MILL



Sturtevant Grinding and Screening Plant, Consisting of Ring-Roll Mill and Newaygo Screen. Fine Material Conveyor from Screen to Bin. Tailings Back to Mill

STURTEVANT-NEWAYGO SEPARATORS





Every Grinding Mill should have a large independent Screen to remove fine material as soon as made. No inside screen can do efficient work, owing to insufficient surface and feeble vibration. Upon the efficiency of the screen depends, to a large extent, the capacity of any mill, therefore get the best.

WE STRONGLY RECOMMEND THE NEWAYGO

TYPE. Inclined vibrating—screens everything screenable that is dry.

RANGE OF OUTPUT. 1-4 inch to 180 mesh—large wire used, and coarse mesh, to produce fine output, viz.:

10	mesh	wire	cloth	produces	approx.	20	mesh	output
20	"	"	"	"	"	40	"	"
40	"	"	"	"	"	80	"	"
55	"	"	"	"	"	100	"	"
100	"	"	"	"	"	180	"	"

VIBRATING MECHANISM. Light hammers tap a reinforced screen surface, held automatically spring-taut.

CAPACITY. Larger than others, because piano cord vibrations keep the meshes open, and prevent clogging, and because the entire clean surface is always working. Thus great efficiency.

POWER. Less than 1 H. P. for largest size.

CATALOGUE No. 79B